REMARKS

The present application was filed on September 17, 1999 with claims 1 through 22. Claims 1 through 22 are presently pending in the above-identified patent application. The present amendment proposes to amend each of the independent claims 1, 2, 7, 8, 13, and 18.

In the Office Action, the Examiner rejected claims 2 and 8 under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The Examiner rejected claims 1-4, 6-10, 12-15, 17-20, and 22 under 35 U.S.C. § 103(a) as being unpatentable over Beale et al. (United States Patent No. 5,825,241) in view of Hampel et al. (United States Patent No. 6,442,211 B1) and rejected claims 5, 11, 16, and 21 under 35 U.S.C. § 103(a) as being unpatentable over Beale and Hampel, and further in view of Sonnenschein et al. (United States Patent No. 6,130,859).

The present invention is directed to a terrestrial repeater for use in a satellite transmission system that may also include a plurality of satellites. The OFDM terrestrial repeaters differentially encode the transmitted signal over frequency, as opposed to time, in order to avoid channel phase distortion.

Formal Objections

Claims 2 and 8 were rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In particular, the Examiner noted that the claims call for a Fast Fourier Transform and the specification calls for an Inverse Fast Fourier Transform.

Claims 2 and 8 have been amended to correct the inconsistencies between the claims and the disclosure.

Independent Claims 1, 7, 13, and 18

The Examiner rejected independent claims 1, 7, 13, and 18 under 35 U.S.C. § 103(a) as being unpatentable over Beale et al. in view of Hampel et al. In particular, the Examiner acknowledges that Beale fails to teach the differential encoder for modulating said OFDM signal in the frequency domain, but asserts that Hampel discloses a system for transmission of digital information comprising a differential encoder for modulating said OFDM signal in the frequency domain (FIG. 1; col. 10, lines 23-26).

Independent claims 1, 7, 13, and 18 have been amended to require storing said differentially encoded symbols and one or more pilot tones in an IFFT buffer to produce an analog signal centered at a desired carrier frequency or transforming said received signal to recover an OFDM signal in the frequency domain having a plurality of sub-carriers, wherein said transformed signal contains differentially encoded symbols and one or more pilot tones and wherein said transformed signal is centered at a desired carrier frequency. Support for this amendment is found on page 9, line 21, to page 11, line 2. In the cited text, the specification of the present invention discloses how to produce a signal centered around the carrier frequency. The specification discloses that there are 489 positive frequency components, 489 negative frequency components, and a central carrier that is nulled. Applicants note that neither Beale nor Hampel disclose or suggest storing said differentially encoded symbols and one or more pilot tones in an IFFT buffer to produce an analog signal centered at a desired carrier frequency or transforming said received signal to recover an OFDM signal in the frequency domain having a plurality of sub-carriers, wherein said transformed signal contains differentially encoded symbols and one or more pilot tones and wherein said transformed signal is centered at a desired carrier frequency.

Thus, Beale nor Hampel , alone or in combination, do not disclose or suggest storing said differentially encoded symbols and one or more pilot tones in an IFFT buffer to produce an analog signal centered at a desired carrier frequency or transforming said received signal to recover an OFDM signal in the frequency domain having a plurality of sub-carriers, wherein said transformed signal contains differentially encoded symbols and one or more pilot tones and wherein said transformed signal is centered at a desired carrier frequency, as required by independent claims 1, 7, 13, and 18, as amended.

Additional Cited References

Sonnenschein was also cited by the Examiner in rejecting claims 5, 11, 16, and 21 for its disclosure that Sonnenschein discloses "an OFDM transmitter and receiver for transmitting and recovering at least one unmodulated carrier (col. 4, lines 44-55)." Applicants note that Sonnenschein is directed to "an underwater apparatus for transmitting and receiving high rate data and voice communication including a transmitter, a receiver, and a Doppler frequency shift compensator." See, Abstract. Soonenschein teaches utilizing differential encoding in the time

domain, as illustrated in Fig. 2.

Thus, Sonnenschein does not disclose or suggest storing said differentially encoded symbols and one or more pilot tones in an IFFT buffer to produce an analog signal centered at a desired carrier frequency or transforming said received signal to recover an OFDM signal in the frequency domain having a plurality of sub-carriers, wherein said transformed signal contains differentially encoded symbols and one or more pilot tones and wherein said transformed signal is centered at a desired carrier frequency, as required by independent claims 1, 7, 13, and 18, as amended.

Dependent Claims 2-6, 8-12, 14-17 and 19-22

Dependent Claims 2-4, 6, 8-10, 12, 14-15, 17, 19-20, and 22 under 35 U.S.C. § 103(a) as being unpatentable over Beale et al. in view of Hampel et al. and rejected claims 5, 11, 16, and 21 under 35 U.S.C. § 103(a) as being unpatentable over Beale and Hampel, and further in view of Sonnenschein et al.

Claims 2-6, 8-12, 14-17, and 19-22 are dependent on claims 1, 7, 13, and 18, respectively, and are therefore patentably distinguished over Beale et al., Hampel et al., and Sonnenschein et al. (alone or in any combination) because of their dependency from amended independent claims 1, 7, 13, and 18 for the reasons set forth above, as well as other elements these claims add in combination to their base claim.

All of the pending claims, i.e., claims 1 through 22, are in condition for allowance and such favorable action is earnestly solicited.

If any outstanding issues remain, or if the Examiner has any further suggestions for expediting allowance of this application, the Examiner is invited to contact the undersigned at the telephone number indicated below.

The Examiner's attention to this matter is appreciated.

Respectfully submitted,

Date: June 14, 2004

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